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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,718	06/07/2007	Yasufumi Shibata	03284.0061	2256
22852	7590	07/21/2009		
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER BOURKE, ALLISON	
			ART UNIT 4133	PAPER NUMBER
			MAIL DATE 07/21/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/587,718

**Applicant(s)**

SHIBATA ET AL.

**Examiner**

Allison Bourke

**Art Unit**

4133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/88)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

**Group I**, claim(s) 1-11, drawn to a clathrate compound.

**Group II**, claim(s) 12-22, drawn to a thermoelectric conversion element.

**Group III**, claim(s) 23, drawn to method for producing a thermoelectric conversion element.

2. The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: all claims relate to clathrate compounds having different formulas. The special technical feature, while shared between all the groups (all three groups are related to clathrates), said special technical feature does not offer contribution over the prior art. Herrmann et al. (*Electronic structure of Si and Ge gold-doped clathrates*) discloses clathrate compounds (containing Ba Au Ge) are known and therefore the said link lacks novelty.

3. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

**Species A**, wherein the clathrate compound is  $\text{Ba}_8\text{Au}_a\text{Ge}_{46-a}$ ,  $16/3 \leq a \leq 6$   
(P9/L13-16)

**Species B**, wherein the clathrate compound is  $\text{Ba}_8\text{Au}_b\text{Ga}_c\text{Ge}_{46-b-c}$ ,  $5 \leq b < 16/3$ ,  $c = 16-3b$  (P9/L23-P10/L1)

**Species C**, wherein the clathrate compound is  $\text{Ba}_8\text{Au}_d\text{Ga}_e\text{Ge}_{46-d-e}$ ,  $0 \leq d < 5$ ,  $e = 16-3b$  (P10/L9-12)

**Species D**, wherein the clathrate compound is  $\text{Ba}_8\text{Au}_f\text{Ga}_{6-f}\text{Ge}_{40}$ ,  $0 < f < 6$   
(P10/L19-21)

**Species E**, wherein the clathrate compound is  $\text{Ba}_8\text{Pt}_g\text{Ge}_{46-g}$ ,  $4 < g < 6$  (P11/L6-8)

**Species F**, wherein the clathrate compound is  $\text{Ba}_8\text{Pd}_h\text{Ge}_{46-h}$ ,  $5 < h < 6$  (P11/L17-19)

**Species G**, wherein the clathrate compound is  $\text{Ba}_8\text{Pd}_i\text{Ga}_j\text{Ge}_{46-i+j}$ ,  $0 \leq i \leq 4$   
(P12/L3-5)

**Species H**, wherein the clathrate compound is  $\text{Ba}_8\text{A}_k\text{Ga}_l\text{Si}_{46-k-l}$ ,  $0 \leq k \leq 4$   
(P12/L18-20)

**Species I**, wherein the clathrate compound is  $\text{Ba}_8\text{E}_m\text{Ga}_{6-m}\text{Ge}_{40}$ ,  $5 < m < 6$   
(P13/L9-11)

**Species J**, wherein the clathrate compound is  $\text{Ba}_8\text{G}_n\text{Ga}_{6-n}\text{Ge}_{40}$ ,  $0 < n \leq 5$   
(P13/L20-22)

**Species K**, wherein the clathrate compound is  $\text{Ba}_8\text{J}_o\text{Ga}_p\text{Ge}_{46-o-p}$ ,  $0 < o < 16/3$ ,  $p = 16-3o$  (P14/L10-12)

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

4. The following claim(s) are generic: Currently none of the claims appears to be generic.
5. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: Species A-K has a different technical feature, because each species has a different formula of clathrate compounds.

6. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allison Bourke whose telephone number is (571)270-1232. The examiner can normally be reached on Monday-Thursday 8:30am-5pm and every other Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571) 272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. B./  
Examiner, Art Unit 4133

/Basia Ridley/  
Supervisory Patent Examiner, Art Unit 4133